Applying an ecological theoretical framework to CME research: a working example

Dr Thomas Roux

SPHeRE PhD Scholar

School of Public Health, Physiotherapy and Sports Science

University College Dublin

thomas.roux@ucdconnect.ie

SPHeRE
Structured Population and Health-services Research Education

STRUCTURE:

- Project Background
- Why an Ecological Theoretical Framework in CME
- Project Ecological Theoretical Framework
- Application of Framework

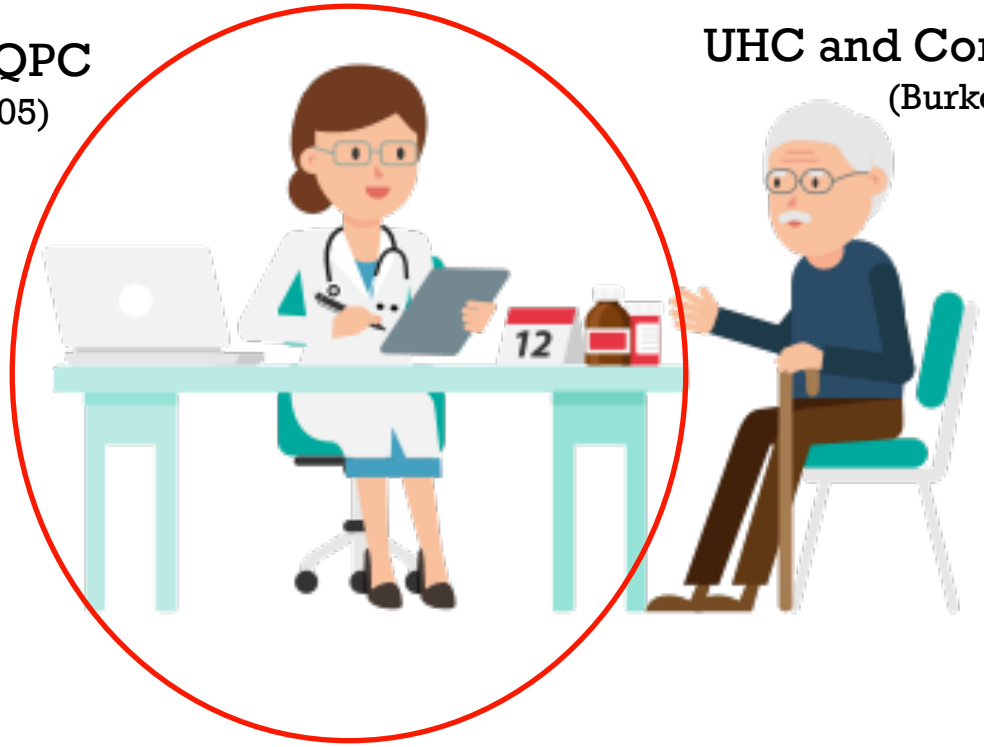
SPHeRE
Structured Population and Health-services Research Education

PROJECT DETAILS

BACKGROUND:

Increasing PH and QPC
(Druss and Marcus, 2005)

UHC and Community-led Care
(Burke et al, 2018)



Epidemiologic Transition
(Oman, 2005)

Exponential knowledge growth
(Densen, 2011)

Necessitates a GP workforce equipped to deal with practice and population changes

SPHeRE
Structured Population and Health-services Research Education

BACKGROUND:

- Continuing Medical Education (CME) is effective (Cervero and Gaines, 2015)
- However, evidence of poor development (Légaré et al., 2015) and inappropriate utilisation (Davis et al, 2006; Sibley et al, 1982)
- Understanding the role of contextual factors in CME next step (Cervero and Gaines, 2015)

PROJECT

- AIM
  - To develop a conceptual framework of contextual factors that play a role in Public Health CME for GPs

- DESIGN
  - Theoretical Framework
  - Mixed-methods Systematic Review
  - Phenomenological Study

THEORETICAL FRAMEWORK

WHY A THEORETICAL FRAMEWORK?

- First step in medical education research (Ringsted, Hodges and Scherbier, 2011)
- Increases generalisability and offers sound explanation for results (Casanave and Li, 2015)
- Lack of explicit application of frameworks in medical education (Zackoff *et al.*, 2019)

WHY AN ECOLOGICAL THEORETICAL FRAMEWORK?

- Theories in medical education individualistic (Bleakley, 2006; Mann, 2011)
- Fails to acknowledge interprofessional systems nature of healthcare (Reeves et al, 2013)
- Increasing emphasis on systems thinking (Bleakley, 2010; Leischow *et al,* 2008)
- Need to utilize socio-cultural theories of learning in medical education (Hodges and Kuper, 2012)

SPHeRE
Structured Population and Health-services Research Education

PROJECT ECOLOGICAL THEORETICAL FRAMEWORK

UNIFIED THEORETICAL FRAMEWORK

Direction of CME Development

Biggs **Bronfenbrenner**	Presage Factors existing before learning experience	Process Factors facilitating learning experience	Product Outcome/purpose of learning experience
Micro-system (Individual)	THE SETTING CONTAINING THE INDIVIDUAL		
Meso-system (Interrelators)	THE INTERRELATIONS BETWEEN MICRO-SYSTEMS		
Exo-system (Influencers)	EXTERNAL SYSTEMS THAT IMPINGE ON MICRO-SYSTEMS		
Macro-system (Ideologues)	OVERARCHING SYSTEMS THAT DEFINE CULTURE OF UNDERLYING SYSTEMS		

Direction of Interactions

Direction of Learning

SPHeRE
Structured Population and Health-services Research Education

UNIFIED THEORETICAL FRAMEWORK

Direction of CME Development

Biggs Principle of Constructive Alignment	Presage Factors existing before learning experience	Process Factors facilitating learning experience	Product Outcome/purpose of learning experience

- Constructivist theory of learning
- Alignment between outcome, TLA and TA (Biggs and Tang, 2011)
- 'Deep' vs 'Surface' learner
- Presage-Process-Product Model (Biggs, 1993)

Direction of Interactions

Direction of Learning

SPHeRE
Structured Population and Health-services Research Education

UNIFIED THEORETICAL FRAMEWORK

Direction of CME Development

Bronfenbrenner Bioecological Model

- Micro-system (Individual)
- Meso-system (Interrelators)
- Exo-system (Influencers)
- Macro-system (Ideologues)

- Impact of ecological systems on human development (Bronfenbrenner, 1976)
- Interactions between systems and individual
- Adds 'depth' to framework
- Final iteration (PPCT) complements Biggs (Rosa and Tudge, 2013)

Direction of Interactions

Direction of Learning

SPHeRE
Structured Population and Health-services Research Education

FRAMEWORK APPLICATION

INFORMS PROJECT DESIGN

- Underlying theories not only descriptive (‘*What*’) but also mechanistic (‘*How*’)
- Lends itself to mixed research paradigms
- Delimits scope of project
  - Explicit definitions
  - Clear constructs

UNIFIED THEORETICAL FRAMEWORK

Direction of CME Development

Biggs **Bronfenbrenner**	Presage Factors existing before learning experience	Process Factors facilitating learning experience	Product Outcome/purpose of learning experience
Micro-system (Individual)	THE SETTING CONTAINING THE INDIVIDUAL		
Meso-system (Interrelators)	THE INTERRELATIONS BETWEEN MICRO-SYSTEMS		
Exo-system (Influencers)	EXTERNAL SYSTEMS THAT IMPINGE ON MICRO-SYSTEMS		
Macro-system (Ideologues)	OVERARCHING SYSTEMS THAT DEFINE CULTURE OF UNDERLYING SYSTEMS		

Direction of Interactions

Direction of Learning

SPHeRE
Structured Population and Health-services Research Education

INFORMS STUDY DESIGN

- Mixed Methods Systematic Review:
  - Aligned with theories
  - Directed grey literature website search
  - Determined article inclusion criteria
  - Provides *a priori* framework for 'Best Fit' Framework Synthesis (Booth & Carroll, 2015)

MIXED-METHOD SYSTEMATIC REVIEW

<u>Bibliographic Databases:</u>
PubMed
PsycINFO
CINAHL Plus
ERIC International
British Education Index
Web of Science

<u>Grey Literature</u>
OpenGrey
RIAN
NDLTD
OATD

<u>Websites</u>
ICGP
RCPI
IMC
HSE
WHO
EC
UEMS-EACCME

<u>Handsearch (01/01/17 – 31/07/19)</u>
Journal of European CME
JCEHP
Medical Education

Database search
n = 1,609

Excluding duplicates
n = 1,571

Screened
n = 1,571

Excluded
n = 1,420
(Wrong context; wrong population; wrong country; wrong topic; wrong language; wrong article type)

Full text screening
n = 151

SPHeRE
Structured Population and Health-services Research Education

INFORMS STUDY DESIGN

- Phenomenological Study:
  - Aligns with theories
  - Identifies key stakeholders (purposive sampling)
  - Delimits scope of interview topics

INFORMING STUDY DESIGNS

Direction of Interview Inquiry

	Presage Factors existing before learning experience	Process Factors facilitating learning experience	Product Outcome/purpose of learning experience
Micro-system: GP	In your experience, what influences those processes and goals, and how?	Describe the process whereby you achieve that goal/purpose within your day-to-day professional practice.	What is your understanding of the goal/purpose of Public Health CME as it relates to your professional capacity?
Meso-system: ICGP, CME SGL Tutor Website: ICGP			
Exo-system: Academia, Pharma, FPHMI Website: RCPI			
Macro-system: HSE, IMC, DoH Website: IMC, HSE			

SPHeRE
Structured Population and Health-services Research Education

INFORMS CME PRACTICE

- Identifies factors and mechanisms of interaction
- Stakeholder awareness of actions
- Reveals (mis)alignment across systems
- Optimise use of CME in line with population needs

TAKE-AWAY

- CME research needs to be theory-informed
- Systems perspective affords greater understanding
- Applying and testing theory moves field of CME scholarship forward

SPHeRE
Structured Population and Health-services Research Education

Leaving Thoughts:

"Moving [medical education research] forward involves the use of theories to frame and generate our questions, using the resulting scholarship to support or modify the theory" (Bordage, 2007; pg. S127)

Supervisor:
Dr Conor Buggy, UCD

Co-Supervisors:
Dr Mirjam Heinen, UCD
Dr Susan Murphy, TCD

thomas.roux@ucdconnect.ie

@drthomasroux

THANK YOU! QUESTIONS?

Acknowledgements
This research was funded by the Health Research Board SPHeRE/2013/1.

SPHeRE
Structured Population and Health-services Research Education

Health Research Board

REFERENCES:

- Bleakley, A. (2006) 'Broadening conceptions of learning in medical education: the message from teamworking', *Medical Education*, 40, pp. 150–157.
- Bleakley, A. (2010). Blunting Occam's razor: aligning medical education with studies of complexity. Journal of Evaluation in Clinical Practice, 16, 849–855
- Booth, A. and Carroll, C. (2015) 'How to build up the actionable knowledge base: the role of "best fit" framework synthesis for studies of improvement in healthcare' *BMJ Quality & Safety*, 24(11), 700–8
- Bordage, G. (2007) 'Moving the Field Forward: Going Beyond Quantitative-Qualitative', *Academic Medicine*, 82(10), pp. S126-128.
- Burke, S. et al. (2018) 'Sláintecare – A ten-year plan to achieve universal healthcare in Ireland', *Health Policy*, 122, pp. 1278-1282
- Casanave, C. P. and Li, Y. (2015). Novices' Struggles with Conceptual and Theoretical Framing in Writing Dissertations and Papers for Publications. Publications, 3, 104–119
- Cervero, R.M. and Gaines, J.K. (2015) 'The Impact of CME on Physician Performance and Patient Health Outcomes: An Updated Synthesis of Systematic Reviews', *Journal of Continuing Education in the Health Professions*, 35(2), pp.131-138

SPHeRE
Structured Population and Health-services Research Education

REFERENCES:

- Davis, D. A. *et al.* (2006) 'Accuracy of physician self-assessment compared with observed measures of competence - A systematic review', *Jama-Journal of the American Medical Association*, 296(9), pp. 1094–1102
- Densen, P (2011) 'Challenges and opportunities facing medical education', *Transactions of the American Clinical and Climatological Association,* 122(319), pp. 48-58
- Druss, B.G. and Marcus, S. C. (2005) 'Growth and decentralization of the medical literature: implications for evidence-based medicine', *Journal of the Medical Library Association*, 93(4), pp. 499–501
- Hodges, B. D. and Kuper, A. (2012). Theory and Practice in the Design and Conduct of Graduate Medical Education. Academic Medicine, 87(1), 25–33
- Légaré, F. *et al.* (2015) 'The Majority of Accredited Continuing Professional Development Activities Do Not Target Clinical Behavior Change', *Academic Medicine*, 90(2), pp. 197–202.
- Leischow, S. J. *et al.* (2008). Systems Thinking to Improve the Public's Health. American Journal of Preventive Medicine, 35(20), S196-203
- Mann, K. V. (2011) 'Theoretical perspectives in medical education: past experience and future possibilities', *Medical Education*, 45, pp. 60–68.

SPHeRE
Structured Population and Health-services Research Education

REFERENCES:

- Oman, A. R. (2005) 'The Epidemiologic Transition: A Theory of the Epidemiology of Population Change', *The Milbank Quarterly*, 83(4), pp. 731–757.
- Reeves, S. *et al.* (2013). Interprofessional education: Effects on professional practice and healthcare outcomes (update). *Cochrane Database of Systematic Reviews*. DOI: 10.1002/14651858.CD002213.pub3
- Ringsted, C., Hodges, B. and Scherpbier, A. (2011) '"The research compass": An introduction to research in medical education: AMEE Guide No. 56', *Medical Teacher*. doi: 10.3109/0142159X.2011.595436.
- Sibley, J. C. *et al.* (1982) 'A randomized trial of continuing medical education', *New England Journal of Medicine*, 306(9), pp. 511–515
- Zackoff, M. W. *et al.* (2019) 'Enhancing Educational Scholarship through Conceptual Frameworks: A Challenge and Roadmap for Medical Educators', *Academic Pediatrics*. Elsevier. doi: 10.1016/J.ACAP.2018.08.003.